



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

March 18 1998

MEMORANDUM

SUBJECT: Field Sampling Plan, Bureau of Indian Affairs Roads Shop Fuel Oil Pipeline, Duck Valley Indian Reservation, Owyhee, Nevada (EPA QA Office Document Control Number [DCN] WATR172S98VSF1)

FROM: David Taylor, Ph.D, Chemist *David R. Taylor*  
Quality Assurance Office, PMD-3

THROUGH: Vance S. Fong, P.E., Manager *Vance S. Fong*  
Quality Assurance Office, PMD-3

TO: Alisa Wong, Project Officer  
Groundwater Office, WTR-9

The subject field sampling plan (FSP), prepared by MSE Technology Applications, Inc. (MSE) for Shoshone-Paiute Tribes and dated February 1998, was reviewed. This project represents an continuation of efforts started by the Bureau of Reclamation. A FSP prepared by the Bureau of Reclamation was last reviewed under the DCN of WATR106S95VSF2. The review was based on guidance provided in "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5, August 1994), "Preparation of a U.S. EPA Region 9 Field Sampling Plan for EPA-Lead Superfund Projects" (9QA-05-93, October 1994), and "Guidance for the Data Quality Objectives Process" (EPA QA/G-4, September 1994).

The Introduction to the FSP indicates that in addition to addressing sampling design, procedures, and criteria, the FSP will address quality assurance (QA) and health and safety for the project. A health and safety plan is included in Section 11 of the FSP. A number of QA issues have been identified which need to be addressed or clarified. These are provided below. Key among these concerns is the appropriateness of using the PID instrument for screening analysis of fuel oil materials.

The subject FSP cannot be approved by the Region 9 QA Office until the following concerns are addressed.

**Major Concerns**

1. [Section 3.0, Project Data Quality Objectives] Section 3.0 states that "[T]he quantitative aspect of the data quality objectives (DQO) process typically uses statistics to design

the most efficient field investigation controlling the possibility of making an incorrect decision"; however, the statistical reasoning and the acceptable level of error that an incorrect decision will be made are not provided. The FSP should also indicate, at least in qualitative terms, the consequences of making a wrong decision, e.g., unnecessarily removing soil or leaving a source of contamination which may affect drinking water and human health, etc

2. [Section 3.3, Expected Data Quality] Section 3.3 states that the investigation is focused on whether the fuel oil is present in the soil at levels requiring soil removal and treatment, and states that the action level will be set at 100 ppm of volatile compounds on the Photo Ionization Detector (PID) for screening purposes and will be used as the indicator that the fuel oil is present. It is not clear whether soil will be removed if soil contains concentrations of diesel above the 100 ppm action limit or if this action level is established to decide whether to collect additional samples only. This issue should be clarified. The source of the 100 ppm action level should be cited in the FSP.
- 3A. [Section 4.1, Soil Sampling Locations; Section 6.1.2, Calibration of Field Equipment; Appendix C, PID Standard Operating Procedure] The assumption is made implicitly that the PID Microtip instrument is appropriate to screen fuel oil samples in soil. Although the reviewer is not directly familiar with this specific instrument, fuel oil represents an even less volatile carbon cut than diesel (which is usually approximately  $C_{12}-C_{16}$ ), and the lack of volatile compounds could present sensitivity problems for the instrument. Since any contamination in the soil has had an opportunity to migrate, degrade and weather, its detection will be further complicated. The FSP should discuss the appropriateness and sensitivity of the PID as a screening tool. If samples are normally heated before they are introduced (which is not evident from review of the SOP) this would improve sensitivity, but it is not clear to what extent this would affect the analyses.
- 3B. Section 6.1.2 cites the manufacturer's instructions in Appendix C for calibration of field instrumentation. The calibration procedure in Appendix C calls for the use of a gas cylinder, however, fuel oil is a liquid at room temperature, and is not available in gas cylinders. The FSP should discuss how the instrument calibration procedures will be modified to more accurately reflect the contaminant of concern. Either Section 6.1.2 or the SOP (or preferably both) should specify the calibration standard concentrations to be used for the project.
4. [Section 5.0, Request for Analyses; Section 10.0, Quality Control] Section 5.0 specifies one sample for laboratory

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quality control (QC) purposes and two samples for field duplicates. Since there are more than twenty samples projected for collection, the number of laboratory QC samples should be increased to two, and the number of field duplicate samples should be increased to three. Laboratory QC samples must be collected at a minimum of 5 percent, while field duplicate samples should be collected at a minimum of ten percent. Laboratory QC samples and field duplicate samples should be identified in Table 5-1, Request for Analysis Table for the FOL (Fuel Oil Line) Investigation. In addition, Section 10.0 should be expanded to specify the frequency of field duplicates and laboratory QC samples. The applicability of equipment rinsates and field blanks should also be discussed in Section 10.0.

### Concerns

- 1A. [Section 3.4, Data Quality Indicators; Table 3.1, Data Quality Indicators] Table 3.1 specifies "analysis-specific detection limits" for the reporting limit for the total petroleum hydrocarbon (TPH) analysis. The detection limit should be based on project needs and specified in the CRF. If CRF limits are acceptable, this should be so stated.
- 1B. Section 3.4 identifies a number of data quality indicators (DQIs), including action levels, detection limits, accuracy, precision, representativeness, and comparability. The discussion regarding comparability specifies a QA objective of 100 percent. It is unclear how this would be calculated. It should be noted that the DQIs comparability and representativeness are considered qualitative, not quantitative, DQIs. In addition, Section 3.4 should be expanded to discuss completeness, a quantifiable DQI. The referencing of QC limits defined in the Client Request Form (CRF) for TPH-diesel would be appropriate if these are suitable for project needs.
2. [Section 3.5.2, Data Validation] The FSP should indicate whether all or a percentage of the data will be validated. For this project, it is recommended that 100% of the confirmatory data be validated. This section should also identify the party performing data validation.

### Comments

1. [Section 1.4, Project Organization] Section 1.4 includes a table which identifies personnel involved in the project. The Quality Assurance Manager for Region 9 is Vance Fong, rather than David Taylor. The plan should be changed.

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Also, since Vance Fong is on the distribution list for the final FSP, David Taylor's name can be removed from the distribution list. The FSP can be mailed to Dr. Taylor.

2. [Section 6.0, Field Methods and Procedures] Section 6.0 states that the laboratory will be notified of the upcoming sampling event. Note that the Regional Sample Control Coordinator (RSCC) should be called to schedule analysis, not the laboratory.
3. [Section 6.2, Soil Sampling] To avoid any confusion in the field, the last sentence of Section 6.2 should state that "[E]very tenth sample will be sent to the EPA Region IX laboratory for analysis for the 3/4-inch FOL."
4. [Section 9.3, Sample Chain of Custody Forms and Custody Seals] It is recommended that example chain of custody (COC) forms and custody seals be included in the FSP.

Questions or comments regarding this review should be referred to David Taylor of the EPA QA Program, at (415) 744-1497. Technical assistance for this review was provided by: Douglas Lindelof of Lockheed Martin Environmental Services Environmental Services Assistance Team (ESAT) Contract No. 68D60005, Work Assignment (WA) No. 9-97-1-10, Technical Direction Form (TDF) No. 97110020.